

**DRUG DELIVERY APPARATUS AND METHOD
FOR DELIVERING A THERAPEUTIC SUBSTANCE**

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ABSTRACT

10 An apparatus and associated method for delivering a therapeutic substance
to a vascular lumen, using an implantable prosthesis, such as a stent, which has
grooves or trenches formed thereon. The grooves are formed on specific regions
of the stent struts to increase the flexibility of the stent. The grooves also provide a
therapeutic material carrying capability for treating intravascular ailments, such as
15 instant restenosis and thrombosis. The therapeutic material loading of the grooves
can be accomplished in several ways. For example, a pure therapeutic material or
a pre-mixed material with a polymer solution, which enhances the adhesion
properties of the material, may be deposited directly in to the grooves using
conventional spray or modified dip techniques. In another example, a
20 microextruded monofilament therapeutic material can be wound about the stent,
such that the monofilament becomes embedded in the grooves.